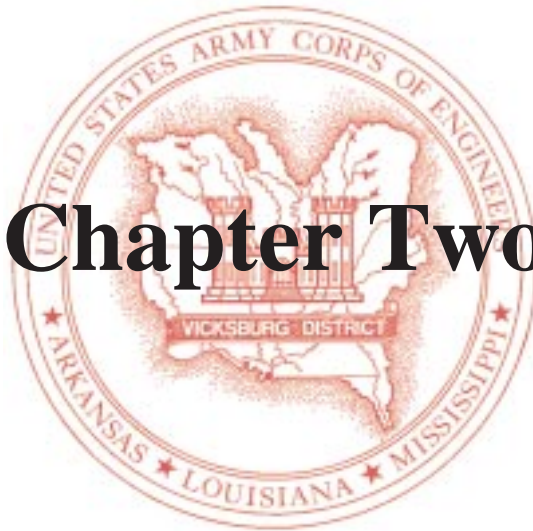


Chapter Two



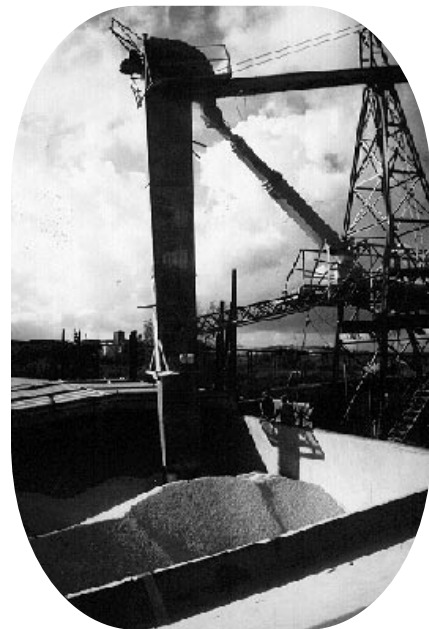
Navigation: Opening the District to the World

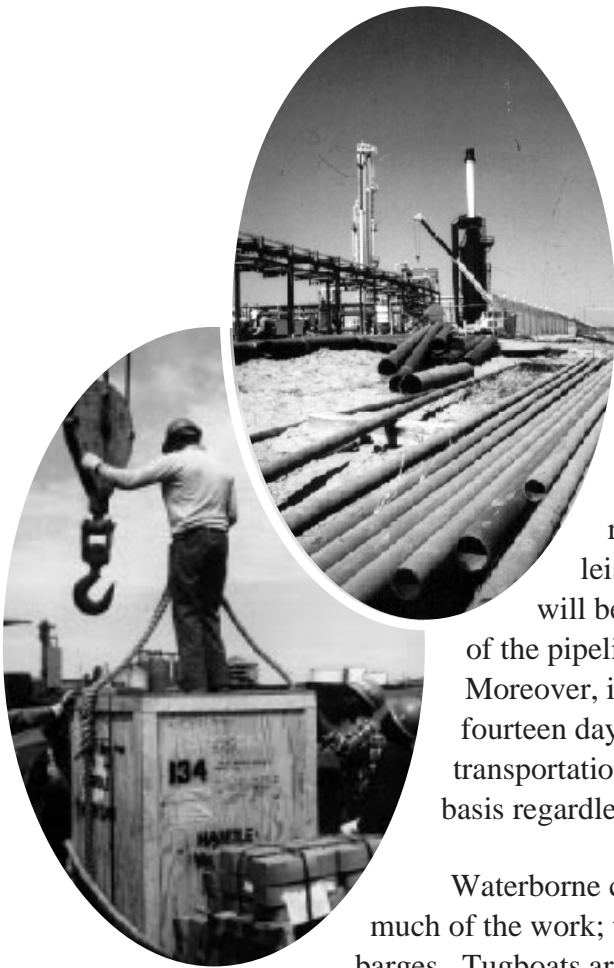


The Vicksburg District evolved and continues to flourish today as a result of the flow of commerce along the rivers of the Lower Mississippi valley. Most important among those rivers is the Mississippi itself, the mainstreet of waterborne commerce in the United States. A large portion of the people and machines of the district are devoted to controlling and maintaining the channel of that mighty river. Also, the Vicksburg District has nearly completed a new navigational system on the Ouachita River in the last decade. On the Red River, an even larger project is under way that already has brought towboats as far as Alexandria, Louisiana, and will reach Shreveport before the end of the century. Both the Ouachita River and the Red River navigation projects have been controversial, however, testifying to a new concern among the American public about the environmental impact of civil works projects and to the limited amount of federal dollars available for their construction.



The improved, navigable waterways of the United States comprise some 25,000 miles of coastline, rivers, and lakes, and in 1984, 1.8 billion tons of freight were carried on the system, 23 percent of it on the Mississippi River and 9 percent in the vicinity of Vicksburg. Petroleum and petroleum products were 40 percent of the commodities shipped by water, coal and coke made up 16 percent, and there were lesser but significant amounts of grain, chemicals, iron and steel, sand and stone, and logs and lumber. In 1989, 463 million tons of commerce made its way up and down the Mississippi River, which includes a 9-foot channel from Minneapolis, Minnesota, to Baton Rouge, Louisiana, and a 40-foot ship channel from there to the Gulf of Mexico. The section of the river, or reach as





it is known, between the mouth of the Ohio River and Baton Rouge, which includes the Vicksburg District, carried 182 million tons.¹

Nonperishable commodities used in large quantities are shipped by water because the transportation, while slower, is more economical than other forms. It will normally take a cargo fourteen days to move from New Orleans to Pittsburgh, for example, and nine days to make the return trip with the benefit of the current. On this leisurely trip, however, the energy cost per ton of freight will be 67 percent of the cost of shipping by rail, 27 percent of the pipeline cost, and 21 percent of the trucking cost. Moreover, if a cargo leaves New Orleans daily, after the first fourteen days, one will arrive daily in Pittsburgh. Thus, water transportation can supply commodities on a regular and timely basis regardless of the length of the trip.

Waterborne commerce is less expensive because the water does much of the work; the rest of it is done by tugboats, towboats, and barges. Tugboats are ocean-going vessels that pull barges on coastal waterways and maneuver ships in and out of harbors. They have rounded bottoms and watertight superstructures. Towboats are flat-bottomed vessels that operate on rivers and canals where waves are not a serious problem. Despite their name, towboats push rather than pull their barges, and the collective unit of towboat and barges is known as a tow. Barges are fitted out for different products and come in different sizes. An average barge, however, is 195 feet long and 35 feet wide and can carry 1,500 tons of freight. On the Mississippi, towboats often push 40 barges at a time. Towboats also vary in size, but even the larger ones are only 160 feet long and 40 feet wide. Their engines, however, generate up to 10,000 horsepower. A large towboat might cost \$5 million and each of its barges \$200,000.²

Challenge of the Mississippi

The Mississippi River is well equipped to carve away its banks, to cut new channels, and to silt up old ones. At Vicksburg, its average flow is 573,000 cubic feet per second, a rate sufficient to cover the State of Mississippi with one foot of water in 26 days. Along with the water, it carries more than 250 million tons of sediment each year.³ Against this force is arrayed the Vicksburg District, whose job is to maintain a

predictable channel that is at least 9 feet deep and 300 feet wide for 278 miles from the Louisiana-Mississippi Line to a point just north of the mouth of the Arkansas River.

The largest group of Vicksburg people and machines employed on the Mississippi is involved in the revetment process, which goes on during the low-water period from August through November. The articulated concrete mat is cast by contractors and stored at Greenville, Mississippi, at Delta Point across from Vicksburg, and at Vidalia, Louisiana. Maintaining the storage fields and moving the mat to where it is needed is the job of the Mat Loading Unit, located at Greenville. Its 22 permanent employees are augmented by approximately 100 more during the revetment season. They begin by loading all their equipment aboard barges, loading other barges with squares of mat, and moving to the work site. Loading a stack of squares, each of which weighs 45,000 pounds, is a difficult task. The stack is picked up by a special device invented by the Corps, loaded onto low-boy trailers, and carried to the water's edge where a crane places it on the mat barge. The stacks have to be placed about six inches apart, a task that requires a trained crane operator.⁴



While the Mat Loading Unit brings the mat, the Bank Grading Unit prepares the riverbank. This unit has 45 permanent employees and approximately 135 seasonal workers. It operates 19 bulldozers and 4 dragline graders, 2 of which are equipped with sonar to allow more precision when working under water. The Bank Grading Unit is outfitted for water transport. The first step in grading the bank is to clear the trees, underbrush, and debris from a 50-foot by 300-foot strip of water's edge. After that, the bank is graded above the water's edge with bulldozers and under water with draglines to achieve a uniform slope of about 18 degrees. Then the exposed bank is covered with shell or washed gravel to protect it until the Mat Sinking Unit arrives.⁵

The sandy nature of the banks and the constant action of the river make grading dangerous work. Six men have been killed since 1952, and there was one near-fatality in 1985. Willie Fisher, a bulldozer operator, was grading a bank when a large area dropped into the





Mississippi, plunging him and his machine into 25 feet of water. Although he could not swim, Fisher held his breath when he went under. When he hit the bottom, he climbed out of the roll cage of the dozer, found the nearby bank, and pulled himself up the side and out of the water. Emerging after about two minutes, Fisher collapsed and was taken to the hospital. Pronounced well, he returned to the job in the afternoon and drove the tractor that pulled out his sunken bulldozer.⁶

The Mat Sinking Unit has about 70 permanent employees and is augmented during the three-month revetment season by about 500 seasonal workers. The unit travels to the site in a flotilla of towboats and barges, and the revetment crew lives during the season on the largest barge, a floating hotel called the quarterboat. Since 1979, the Motor Vessel *Benyaurd*, a 4,300-horsepower towboat named for the first engineer in charge of the Vicksburg office, has moved the revetment operation from site to site.



Central to the mat sinking operation are the mat boats, the specialized barge decks on which the squares of mat are tied into a larger mat and from which the finished product is lowered into the water. When sunk, the articulated, concrete mattress is 156 feet wide and up to 800 feet long, depending on the length of the bank to be covered. The squares are wired together with a specially developed pneumatic tool, which operates and is handled similar to a jackhammer. Attached to the mat boat is a mooring barge that moves the mat boat into and away from shore with a winch. Upstream is another barge, known as the “upper set,” which is anchored to the shore and from which the

mat boat is winched upstream and positioned anew after each mat placement has been completed. Vicksburg crews work in two ten-hour shifts, and have been known to lay 20 acres of mat in a single day. When the mat is in place, riprap, consisting of stones not exceeding 125 pounds each, is spread from the waterline to the top of the bank in order to provide additional protection above the mat.⁷



Revetment as it is done in Vicksburg is unique to the Lower Mississippi valley. Only in the Memphis District of the Corps of Engineers is there an operation similar to that at Vicksburg. The process has been going on since World War I and has been very successful in stabilizing the banks of the Mississippi River. At the end of the 1991 season, the Vicksburg District had 270 miles of revetted banks, and more was being added at a rate of just under three miles a year. About 90 percent of needed revetment in the Vicksburg District has been done, and for the last several years the Vicksburg crews have worked on banks in the New Orleans District.⁸

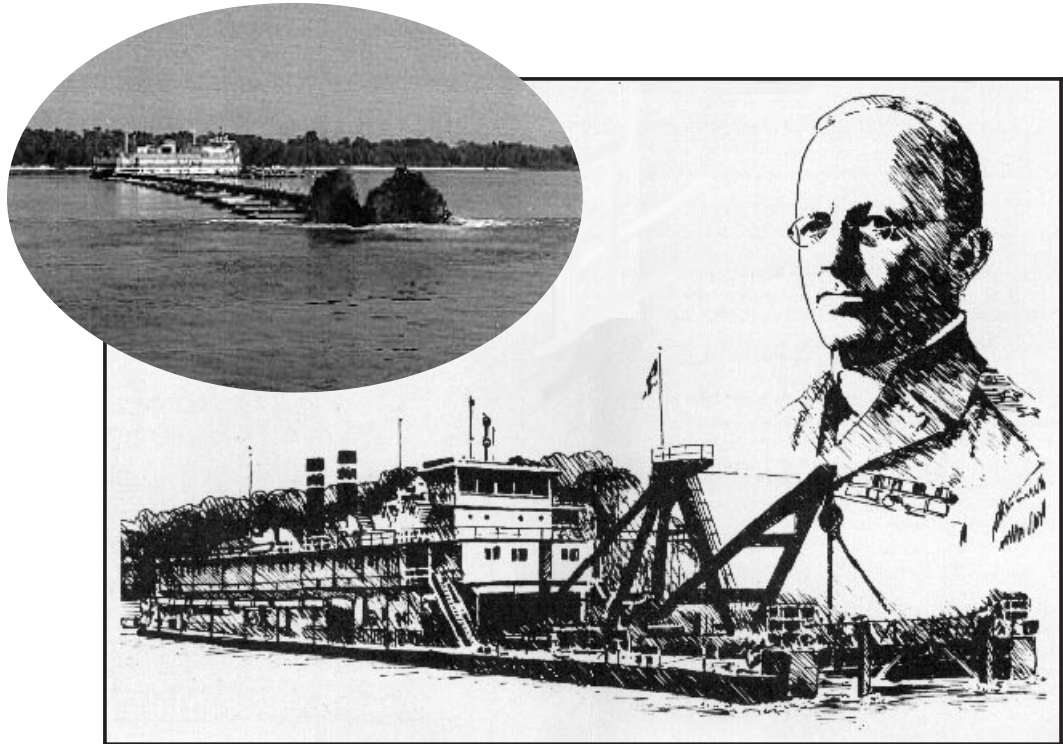


The building of dikes is another way in which the Mississippi channel is maintained. While revetment stabilizes the river within its banks, dikes force the current to move into a desired channel. They are particularly useful where the current would otherwise cross from one bank to the other creating a shallow area. Stone dikes have only been used in the Mississippi since about 1960, but they have become very important. At the end of 1991, there were eighty-five miles of dikes in the Vicksburg District, and they were being built at the rate of about two miles per year.⁹



With its banks reinforced and its current controlled, the Mississippi flows faster and cleaner, but it continues to carry a tremendous amount of sand and silt that is deposited at various places in the channel. Locating those shallow places is the job of the channel patrol boat, Motor Vessel *Lipscomb*, a towboat built in 1958 and overhauled in 1983. Now powered by two 800-horsepower engines, the *Lipscomb* spends six to eight months a year patrolling the river, looking for changes in the location or dimension of the channel, examining dikes and revetted banks, and setting or replacing buoys. When a channel bottom is found to be building up, it is checked weekly and put on the list for dredging during the low water season. During the remainder of the year, the *Lipscomb* assists in the revetment process by towing mat for the mat sinking unit.¹⁰

Most of the dredging in the Vicksburg District, and some in the New Orleans District as well, is done by the Dredge *Jadwin*, which was fifty years old in 1983. The *Jadwin* is a dustpan dredge; that is, it removes sand and silt by means of a suction unit shaped like a dustpan. The



dredge begins its operation by planting two anchors 1,000 yards or so ahead of it, dropping the dustpan onto the bottom, and activating water jets around the head that loosen the river bottom. The dislodged sand and silt material is sucked into the dustpan and carried through a floating pipeline where it is discharged some 800 feet away from the dredging site.

The *Jadwin* is self-propelled, equipped with radar, and can operate in most types of weather. The dredge takes about two hours to set up when it reaches a dredging site, and it can move in or out of the channel in about five minutes in order to let tows pass. The 32-foot-wide dustpan is capable of removing 3,600 cubic yards of material an hour. In 1986, the steam engines on the *Jadwin* were replaced by a diesel-electric power system that is more economical and easier to maintain. The *Jadwin* is now more efficient in a number of ways: its crew size has been reduced from 66 to 52 and its operating costs from \$37,000 a day to \$33,000 a day. In 1961, the dustpan ladder was lengthened from 35 to 60 feet, giving the dredge the ability to work in the deeper ship channel below New Orleans.¹¹

Low Water Perils

In 1977, low water levels at Marshall Bend, north of Vicksburg, stalled 35 tows until the *Jadwin* came out and dredged the area. In October 1980, however, the Dredge *Jadwin* herself was the center of a low-water crisis. The dredge was working at Reid Bedford Crossing, nine

miles south of Vicksburg, when the towboat *Lily M. Friedman* came upriver pushing 29 barges. Three hundred yards above the *Jadwin*, the tow ran aground. Only good fortune kept it from breaking up, and the barges careening downriver into the *Jadwin*, which was immobilized by its anchor lines that ran under the trapped tow. When the *Lily M. Friedman* and two other commercial towboats could not loosen the trapped barges, the tow was disassembled and the loose barges backed down the river past the *Jadwin*. Eventually, the towboats isolated and freed the five grounded barges. Twenty-one tows held up by the grounded tow went on their way, and the *Jadwin* went back to work.¹²



The drought of 1988 caused a much more serious problem on the Mississippi River. Arid conditions that first appeared in the Pacific Northwest early in the year caused extensive damage to crops and livestock in two-thirds of the nation by the summer. In the middle of June, still a period of high water in normal times, the father of waters was as low as any time since records began to be kept in 1872, and discussion was being given to diverting Great Lakes water down the Mississippi, a prospect that appalled the Canadian government as well those of the midwestern states.¹³

The first major problem for the Vicksburg District came near Greenville, Mississippi, where an estimated 70 tows with some 1,200 barges were stalled by low water on June 17. The *Jadwin*, which had been working in the 40-foot ship channel south of Baton Rouge, came north and cleared several blockages near Greenville. The cleared channel could only accommodate one-way movement, however, and the U.S. Coast Guard was called in to direct traffic, alternating passage between groups of northbound tows and groups of southbound tows. Drought conditions continued through July and into August, and the nine-foot channel was lost again and again at a variety of places, despite the fact that the Vicksburg District kept five dredges working on the river. Cutterhead dredges, which are relatively immobile when they are working and



therefore at risk to be hit by tows, were used on the Mississippi River for the first time, an indication of the severity of the crisis.

To be effective, dredging must be done in a precise manner. A channel dug contrary to where the river wants to go will quickly be filled in with new sand borne by the current. Reading the river and determining its alignment is, according to Louis Logue, chief of the Navigation Branch, “an art rather than a science,” and at Vicksburg its chief practitioner is L. C. Fumbanks III, chief of the Navigation Section. During the drought of 1988, Fumbanks’ skills were important enough so that he was flown from trouble spot to trouble spot by helicopter in order to see that the dredges worked in exactly the right places.¹⁴



The Vicksburg District is also involved in constructing ports and harbors along the Mississippi River. A small harbor, for example, was improved at Lake Providence, Louisiana, when the Corps of Engineers dredged a channel and a turning basin and discharged the spoil behind retaining dikes to create additional land for industrial use. Local interests built the dikes and in all provided \$223,000 to more than match the government’s contribution, valued at \$199,000. Similar projects were carried out at Rosedale Port, north of Greenville, Mississippi, at Claiborne County Port, near Port Gibson, Mississippi, and at Madison Parish Port, just north of Tallulah, Louisiana. The latest port built by the Vicksburg District on the Mississippi River is at Yellow Bend, located just south of Arkansas City on the line separating Chicot County and Desha County. Begun in August of 1989, it includes a 1,500-foot access channel and a 300-by 800-foot turning basin as well as 50-foot berthing areas. Port Authority Chairman Sam Bowman believes that the slackwater harbor will “become a magnet and draw people to this area. The Mississippi can be a great asset.”¹⁵

Upgrading the Ouachita

While the Vicksburg District has been maintaining and improving its section of the Mississippi during the last fifteen years, it has also continued to construct the new nine-foot navigation system for the Ouachita and Black Rivers. The two Louisiana locks and dams, Jonesville and Columbia, were completed in 1972. After that, work in Arkansas was held up for a time by the high water of 1973 and 1975 and by difficulties in acquiring land. The district broke ground for the

Felsenthal Lock and Dam, six miles above the Arkansas-Louisiana line, in 1974, but it was another two years before the access road was completed.

Construction at Felsenthal began with the digging of a slurry trench, 5 feet wide and 45 feet deep, which was filled with impermeable material to lessen the seepage of groundwater into the site. This innovative engineering technique reduced the amount and cost of groundwater pumping necessary after the hole was excavated. To protect against high water, an earthen cofferdam was built around the excavation. Hardaway Constructors of Columbus, Georgia, built the lock and dam. The 84-foot by 600-foot lock was made of reinforced concrete U-frame sections and built on a soil foundation. The dam, also concrete and steel, consisted of a 200-foot navigation pass and a spillway made up of three 50-foot bays separated by 8-foot piers. The flow of the water over the spillway would be regulated by three 50-foot by 26-foot tainter gates. An inflatable Fabridam was installed on the navigation pass to raise the pool by five feet during low stages, providing additional water for a U.S. Fish and Wildlife refuge upstream.



In October 1977, another ground-breaking ceremony took place, this one about 55 miles upriver from Felsenthal where work was beginning on Calion Lock and Dam, the fourth and final link in the Ouachita-Black navigation project. In 1979, with an access road nearly complete, Blount International of Montgomery, Alabama, won the bidding to construct the lock and dam itself. Except for nine-foot (instead of eight-foot) piers on the spillway and a hinged crest gate rather than a Fabridam on the navigation pass, the lock and dam at Calion was similar to the one at Felsenthal. A slurry trench was impossible at Calion because of the soil, so the site was dewatered using the conventional technique of wells and pumps. Three years later, with the structure nearly finished, dredging began in order to create a channel several hundred yards long to bring the river to the dam. Rock was encountered in the channel, however, and its removal was not completed until January 1987.



The construction of both projects was supervised by the McGehee Area Office headed by Area Engineer Larry Goodson. In addition to building the new locks and dams, it was also necessary to remove Lock and Dam 6 and Lock and Dam 8, both of which had supported the previous 6.5-foot navigation system. By the fall of 1984, despite the channel work still going on at Calion, each of the Arkansas dams had raised its

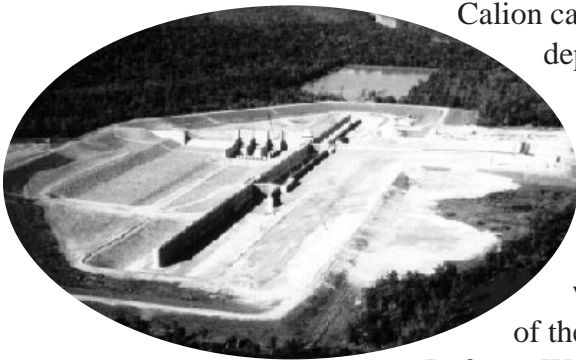


pool—that is, the water backed up by the dam. The pool created by Calion Lock and Dam extended 50 miles up the Ouachita River to Camden, Arkansas, which was now at the head of nine-foot navigation on the Ouachita. In 1985, the Vicksburg District also completed the construction of a harbor near Crossett, Arkansas, that had been added to the Ouachita-Black Navigation Project in 1980. Crossett Harbor consisted of an entrance channel, a turning basin, and ten acres of filled land suitable for port facilities.¹⁶



The two new locks and dams were similar to those at Jonesville and Columbia, but somewhat improved. All four of them had lock chambers that were 84 feet by 600 feet, more than double the size of the old system and able to handle a modern tow with up to four barges. All of them also had navigation passes, to allow vessels to cross when the water is high without going through the lock. The hinged crest gate on the pass at

Calion can be raised when the water is low in order to increase the depth of the pool. The Fabridam in the pass at Felsenthal was designed for the same purpose, but it did not prove durable and was replaced with a hinged crest gate at the end of 1989.



A deeper pool is particularly important at Felsenthal where the additional water increased the size and duration of the water habitat available for Felsenthal National Wildlife Refuge. Water level in general is controlled by the tainter gates: five at Jonesville, four on Columbia, but only three each on Felsenthal and Calion because of the decrease in discharge on the upper river. The gates on Felsenthal and Calion are controlled by an electric hydraulic system, while at Jonesville and Columbia the hydraulic system is operated manually. Felsenthal and Calion also have computers to monitor the

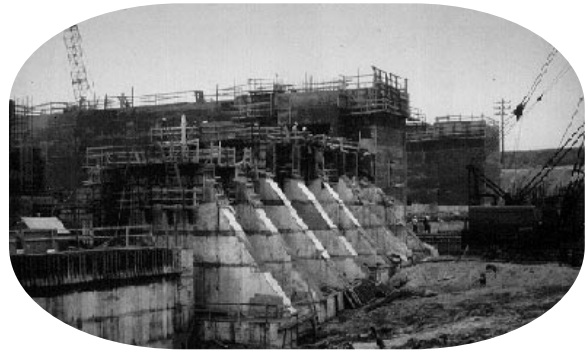
operation of the gates and closed-circuit television to check the water on either side of the dam prior to opening and closing the gates.¹⁷

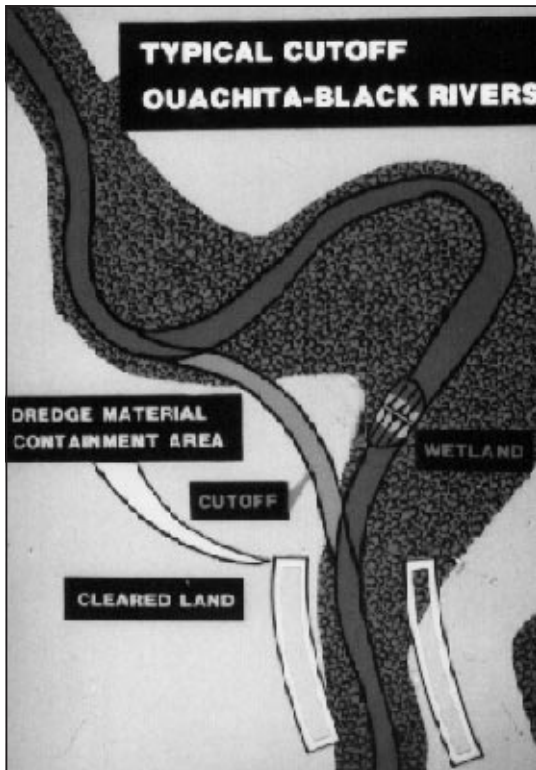
An Environmental Confrontation

While the new locks and dams ensured that nine-foot navigation could take place, the nature of that navigation was unresolved, and it soon became the focal point of a decade-long controversy over economics and the environment. In November 1979, Vicksburg District Engineer Col. Samuel P. Collins, Jr., indicated that a towboat could push only one barge at a time on the Ouachita unless its channel was improved by constructing cutoffs and widening bends. A tow with three barges in tandem could navigate the river if it had a 100-foot-wide channel and a 1,000-foot turning radius in the bends. Collins pointed out that the channelization work would require significant amounts of land, both for the removal of excavated or dredged material and for the disposal of the material. Moreover, much of the land near the river was wetlands containing bottomland hardwoods and thus sensitive from an environmental point of view.¹⁸ By the end of 1980, Collins was able to be more specific about the proposed changes: 58 cutoffs and 57 bend widenings would be required in Louisiana and Arkansas and 4,200 acres of land would have to be acquired.

Meanwhile, a significant amount of opposition had developed among environmentalists and sportsmen in north Louisiana. Congressman Jerry Huckaby was active on behalf of his concerned constituents in the Monroe area, who had banded together to create an organization called SORE, Save the Ouachita River Environment. Louisianians worried that straightening the river would detract from its natural beauty and destroy wildlife habitats. They were also concerned about the effects of possible alternations in the velocity and level of the water. Finally, they did not believe that the multiple barge tows were necessary given the likely demand for shipping services.¹⁹

Col. Collins and his staff attempted to answer the criticism. The district engineer made it clear that the river would remain serpentine, losing only 8 percent of its length, and that its flow and stages would not



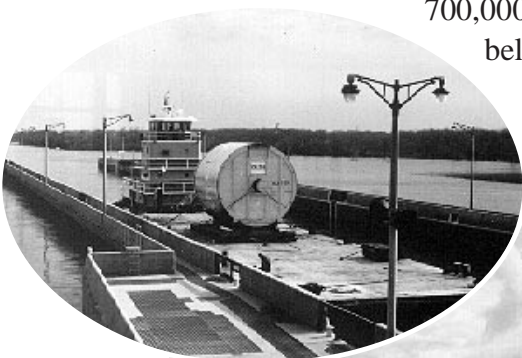


be affected by the cutoffs and bend widenings. He also pointed out that the Ouachita-Black Navigation System had contributed 18,000 acres of protected habitat at D'Arbonne National Wildlife Refuge in Louisiana and 65,000 acres at Felsenthal National Wildlife Refuge, and also improved the habitat potential of Catahoula Lake.

While it defended its earlier plan, the district indicated that alternatives were also under consideration as a result of the controversy. Collins discussed a two-barge plan that would eliminate the need for 80 percent of the cutoffs, although it would require about the same number of bend widenings, since some of the saved bends would now be widened. This plan would shorten the river by only 6 miles as compared with 32 miles under the three-barge alternative. Rights-of-way were drastically reduced as

well. The three-barge tow required 4,200 acres, the two-barge tow only 1,100 acres. District personnel argued that the navigation system would provide \$53.6 million in annual benefits throughout its life. Most of this would come in the form of transportation savings, but there were significant fishing, hunting, and recreational benefits as well as salaries paid to local labor in the construction process.

With respect to usage, the actual tonnage on the two lower pools in 1978 was 1.1 million tons as compared with an initial projection of only 700,000 tons. With the proposed channel improvements, the Corps believed that tonnage in 1985 would reach 3 million and then increase at 7 percent a year to reach 12 million in 2034. About 60 percent of the tonnage was anticipated to come from Arkansas. The estimates were based on a study indicating

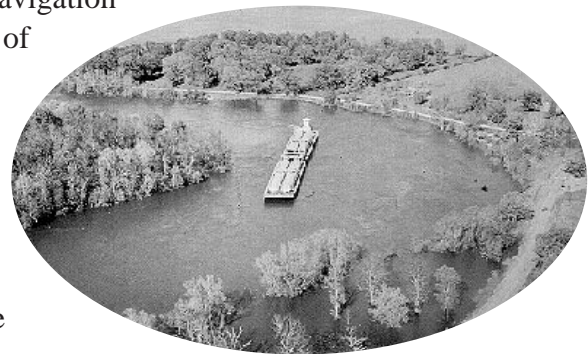


about 100 firms were potential users of the waterway who would ship forest products, sand and gravel, agricultural products, petroleum, fabricated metals, and industrial chemicals.²⁰

In August of 1981, the controversy moved north into Arkansas. The U.S. Fish and Wildlife Service (FWS) in Jackson, Mississippi, also released a public statement saying that the three-barge plan would aid navigation at the expense of the environment and was unacceptable. The *Little Rock Arkansas Gazette* then editorialized that the Corps was attempting to turn the Ouachita into “a river barge channel with little other recreational or environmental value.” Remembering the battle a few years earlier against channelization of the Cache River, the paper called on the Corps once again to offer a better plan. *Gazette* cartoonist George Fisher added the coup de grace with a picture of his stereotyped Army engineer, a Colonel Blimp wearing a pith helmet with a “keep busy” button on it, painting a straight line channel through an S-shaped Ouachita River.²¹



On the other side was the Ouachita River Valley Association (ORVA), pointing out that it had been promoting the current navigation project for 30 years. ORVA discounted the analysis of FWS and emphasized the mitigation lands that had been purchased by the Corps and the recreation facilities associated with the current project. To the ORVA, the larger tows would mean more river traffic, a port in Camden, and industrial development. The issue boiled down to “jobs and economic security” on one hand and “fishing” on the other.²²



By the end of August, however, the terms of debate had changed. At meetings in Monroe and El Dorado, Vicksburg officials offered a new plan that would allow four barges travelling two abreast rather than three in a row. This configuration would reduce the necessary turning radius from 1,000 feet to 700 feet and drop the cutoffs from 58 to between 27 and 32. FWS was satisfied with the results in Louisiana, which would have only two of the cutoffs, but it felt that the Arkansas environment was still being destroyed without reason, pointing out that only 5 percent of the projected increase in tonnage was anticipated to be above Crossett, Arkansas, but 92 percent of the cutoffs and 90 percent of the environmental

damage would occur in that reach of the river. An *Arkansas Gazette* editorial responded favorably to the position taken by the FWS.²³



The issue finally came to a head at a public meeting held by the Vicksburg District in El Dorado on September 1. Col. Collins opened the meetings with a presentation of the problem and the alternatives. The opposition to the four-barge plan proposed instead that only two barges be used, an alternative that would supposedly require only 15 cutoffs in total. The crowd of several hundred was also hostile to channelization. The Arkansas Waterways Commission also supported that position, pointing out that it was twice as costly to ship commodities from south Arkansas by rail to New Orleans as it was by water.²⁴



The effectiveness of the anti-channelization campaign became evident in early November when Senator David Pryor of Arkansas sponsored an amendment to an appropriations bill that prohibited the Vicksburg District from spending additional money on the alignment of the Ouachita until it had undertaken a full study of the two-barge plan in the river above Crossett, Arkansas. Pryor, a native of Camden and a strong supporter of Ouachita navigation, noted that “a lot of people are deeply, deeply concerned about 25 cutoffs” and that it was worth waiting another six months to see what might be done. The amendment was supported by Arkansas’ other Senator, Dale Bumpers, and by south Arkansas Representative Beryl Anthony.²⁵

As instructed, the Vicksburg District planners restudied the problem and sent their findings to Congress. No response was forthcoming, but the Pryor Amendment did not call for any. The district then prepared a design memorandum for realigning the Ouachita River that was based on the use of four-barge tows to Crossett and two-barge tows above there and called for 10 cutoffs and 14 bend widenings. This was submitted to the Lower Mississippi Valley Division for approval in 1987. In the spring of that year, ORVA called the solution “livable.” H. K. “Big Daddy” Thatcher, founder of ORVA, was remembered in the Water Resources

Development Act of 1986, which changed the name of Calion Lock and Dam to H. K. Thatcher Lock and Dam.²⁶

In the summer of 1988, a new element was added to the opposition when the Arkansas chapter of the Sierra Club began recruiting members in Arkansas using the Ouachita River as its major issue. A year later, the Ouachita River Basin Group of the Sierra Club testified before the House Appropriations Subcommittee on Energy and Water Development, calling for the deauthorization of the channelization project and the use of the river for recreational purposes. The concept of returning the Ouachita to something like its natural state also received editorial support from both the *El Dorado News-Times* in south Arkansas and the Monroe, Louisiana, *News-Star*.²⁷ Public opinion also contributed to another problem. Neither Louisiana nor Arkansas was willing to provide the local matching funds that were necessary to purchase rights-of-way for the channelization work. For a time it seemed that the project had gone as far as it could.²⁸



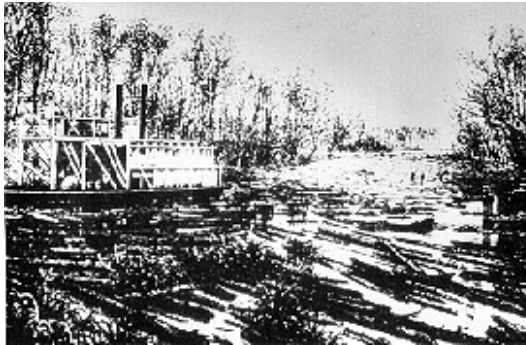
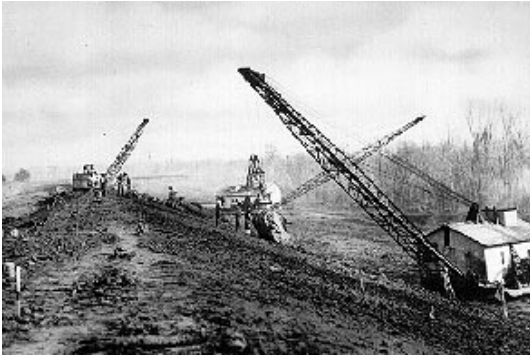
Substantial support for the scaled-down channelization program continued to exist among south Arkansas political and business leaders, and they had a powerful ally in U.S. Congressman Beryl Anthony. Opposition was also muted by the efforts of Col. Stephenson Page, who invited critics of the project to join him in an environmental roundtable to discuss how the negative effects of the project might be further ameliorated. In August of 1991, Anthony announced that Congress had provided money to do the channelization work and also long-term loans to local governments to make acquisition of the rights-of-way easier to acquire.²⁹



But it was not to be. Opposition to the project was strong enough that the Bush Administration was unwilling to go forward with the project. The land was not purchased, and the channelization was not done. The Vicksburg District operated and maintained all the locks and dams, and commerce was increasing in the lower two pools faster than expected. Above Sterlington, Louisiana, however, there was almost no navigation. The project was 92 percent complete and seemed destined to remain that way.³⁰

Return to the Red

While he was involved in the Ouachita controversy, Col. Collins received some momentous news. On September 18, 1981, Maj. Gen. William E. Read, division engineer of the Lower Mississippi Valley Division, announced that the Red River Basin in Louisiana and Arkansas was being transferred from the New Orleans District to the Vicksburg District.³¹ With it came one of the largest civil works projects in the Corps. In 1968, Congress had authorized construction of the Red River Waterway, a navigation system that would extend from the Mississippi River to Denison Dam in Oklahoma with an additional segment running from Shreveport, Louisiana, to Daingerfield, Texas. The total project cost was estimated at \$1.6 billion.



The Red River was an effective avenue of commerce as late as the turn of the century, but the railroad slowly put it out of business. While the river stood idle from a productive standpoint, the sandy soil of its banks allowed heavy erosion that devoured thousands of acres of farmland each year. In 1946, Senator John Overton of Louisiana won authorization for a navigation project on the Red. Then the Flood Control Act of 1950 called for a plan of development for the Arkansas, White, and Red river systems, and an eight-volume plan for the Red emerged in 1968. For number of reasons, among them the Vietnam War, start-up funds were not available until 1973. A design memorandum for the first phase of the project, from the Mississippi River to Shreveport, Louisiana, was approved in 1976. The New Orleans District began working on Lock and Dam 1, near Marksville, Louisiana, in June of 1977.³²



On October 4, 1973, Maj. Gen. Charles C. Noble, division engineer, discussed the importance of the Red River Waterway in a speech to the Chamber of Commerce in Shreveport. The navigational benefit would be access to the Mississippi and its tributaries and to the Gulf Intracoastal Waterway. Of particular importance would be the international market available from the deep-water ports of Baton Rouge and New Orleans. Products would include “iron and steel pipe, scrap iron and steel, lube oil, benzene, alcohol and soybeans.” Realignment work would require 46 cutoffs below Shreveport that would shorten the river by 50 miles. About 1,000 acres of recreational facilities would be built along that stretch.³³

A major force in securing approval of the Red River Waterway was the Red River Valley Association (RRVA), a private organization that dates back to 1925. Based in Shreveport, the RRVA currently has about 450 members from the four states of Arkansas, Louisiana, Oklahoma, and Texas who are united by their common economic interest in water. Navigation is an important concern of the organization, but so also are chloride control, flood control, bank stabilization and erosion control, hydropower and solar power, and recreation. The ranking of the issues depends on geography as well as values. West Texas and Oklahoma are interested in chloride-free water for irrigation and consumption, East Texas and Arkansas want clean water but also bank stabilization, and Louisiana is interested in navigation. Each February, the organization meets to develop resolutions on the issues. In April, 35 to 50 members journey to Washington to lobby for the particular water needs of their area and for the concerns of the association as a whole. In July 1976, when it reported the happy news that President Ford had signed a public works bill containing \$16.2 million for the waterway, the *Shreveport Journal* referred to the members of the RRVA as “prime movers in navigation efforts.”³⁴

Friends of the Red River Waterway were sorely tested in the spring of 1977 when President Jimmy Carter included that project on his well-known “hit list” of water projects that were to be denied further funding. As governor of Georgia, Carter had stopped the Corps from channelizing a coastal creek and from building a multipurpose dam at Spirewell Bluff on which he thought the engineers had inflated the benefit estimates. Influenced by these experiences, candidate Carter was forthright about his opposition to civil works projects: “At a time when the whole country is concerned about inflation





and high taxes, we don't need to spend tens of millions of dollars for the purpose of perpetuating the Army Corps of Engineers." Shortly after taking office, President Carter had his staff begin compiling a list of ongoing water projects that posed problems from the standpoint of economic benefits, the environment, or other concerns. On February 21, he sent his 1978 budget to Congress with the deletion of 19 ongoing water projects amounting to \$289 million. The Red River Waterway was not on this initial deletion list, but it appeared on a revised list of 30 projects that was announced on March 23. The projects passed all the environmental tests, but it came up with a benefit-to-cost ratio of less than one when the administration used a six and three-eighths percent figure in determining the cost of borrowed money.



Even before it was on the official "hit list," Louisiana Senator J. Bennett Johnston, Jr., of Shreveport acted to aid the Red River Waterway. On March 10, Johnston and Senator Russell B. Long of Louisiana sponsored a successful measure that prohibited the President from impounding any funds that were already appropriated for waterway projects in 1977 or any that might be voted for in 1978. Johnston made it clear that his own concern was the Red River project, which he called "the single most important step taken for economic, social and recreation values for the whole Red River Valley area since Captain Shreve removed the Great Raft."

Senator Long pointed out that, while inflation had increased the price of borrowing money, adding to the cost of civil works projects, it also added to the value of the benefits that they generated.



He felt that higher rate should be figured into both sides of the benefit-cost ratio.³⁵ The New Orleans District of the Corps of Engineers held a public meeting in Shreveport attended by about six hundred persons, almost all of them in favor of the waterway.³⁶ Eventually President Carter revised his list a final time and the Red River Waterway was saved. Probably most important in the decision-making process was the influence of Senator Long, who was chairman of the

Senate Finance Committee. Long met with Carter a few days before the final decision, which actually involved four projects in Louisiana. The other three remained on the hit list, but the Red River Waterway, by far the largest project, won presidential approval.³⁷

After the project was turned over to the Vicksburg District, the Red River project remained controversial. President Ronald Reagan wanted to halt the navigation system at Alexandria, with the completion of Lock and Dam 2 already under construction, but he was foiled by Congress, led by Senator Bennett Johnston. When the Reagan administration refused to request funds for work between Alexandria and Shreveport, Congress simply added them to the budget. A critical turning point came in the fall of 1986 when Congress added money to the federal budget for 1987 to begin construction of Lock and Dam 3 at Colfax, Louisiana, well above Alexandria. Funds were also made available to begin work simultaneously on Lock and Dam 4 at Clarence and Lock and Dam 5 at Robson.³⁸ Opposition continued. The Inland Waterway Users Board placed Red River navigation in a low category for funding on the basis of its anticipated costs and benefits, the *Shreveport Journal* called the project a “pork barrel,” and President Bush attempted to halt construction with Lock and Dam 3. Congress, however, continued to provide financial support for the waterway from the Mississippi River to Shreveport.³⁹



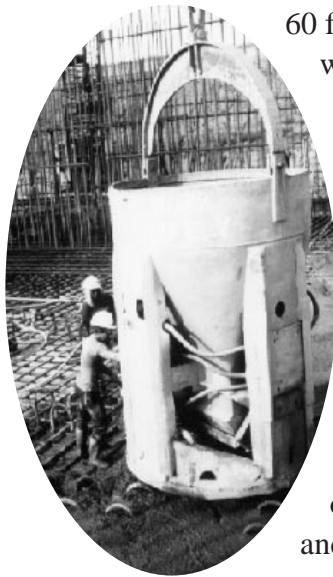
In 1981, when the project was turned over to the Vicksburg District, the cost of bringing navigation as far as Shreveport was estimated at \$1.6 billion in October 1981 dollars. Planners believed that, if the waterway were finished in the year 2000, it would carry 3.9 million tons tons annually in 40 years. Five locks and dams were necessary to make that happen, each of them with lock chambers that were 84 by 684 feet, enough space to accommodate a towboat and six barges.⁴⁰ The New Orleans District had been working on Lock and Dam 1 since 1977 and would finish it in 1984.



In November 1982, the Vicksburg District awarded a \$108-million contract, the largest in its history, to Overton Constructors, a consortium of three companies, for the construction of Lock and Dam 2, now officially known as the John H. Overton Lock and Dam, in honor of the United States senator from



Alexandria who was an acknowledged expert on flood-control legislation and had helped to initiate the Red River project. Located in Ruby, Louisiana, about 20 miles south of Alexandria, the damsite is 44 river miles above Lock and Dam 1. Work began February 14, 1983, supervised by the Shreveport Area Office of the Vicksburg District under Area Engineer John Gillespie.



Overton Lock and Dam contains a lock with mitre gates at each end, 34 feet high at the upper end and 49 feet high at the lower end. The 384-foot spillway contains five tainter gates, each of them 60 feet wide and 38 feet high and a 250-foot overflow weir. As with most navigation locks and dams, Overton was built in a river bend that would become a cutoff when channels were dredged to bring the river to and from the site. Once access roads were built, a large hole was excavated and surrounded by an earthen cofferdam to prevent flooding. Eventually, Vicksburg construction personnel excavated more than 10 million cubic yards of earth at the Overton site, enough to fill the New Orleans Superdome more than two times. Ground-water was removed by electric pumps operating in 20 wells. A stable base for the lock and dam was achieved by driving 6,356 steel H-piles, some of which were 81 feet in length. Eventually, 201,094 cubic yards of concrete went into Overton Lock and Dam and 866,504 tons of stone were used on the site.⁴¹



While Overton was under construction, the Vicksburg District issued a new contract to provide sedimentation control in the downstream approach channel. Silt had accumulated in and adjacent to the lock chamber of Lock and Dam 1, making it necessary to unwater the lock for repair purposes. Based on model studies done at the Hydraulics Laboratory of the Waterways Experiment Station, the Hydraulics Branch at the Vicksburg District recommended that dikes be built to alter the flow of upstream water at Lock and Dam 1 and that a wall be constructed downstream to separate the flows from the lock from those of the spillway. The problem at Overton was not anticipated to be as severe as at Lock and Dam 1, but measures were taken to minimize the problem.⁴²

Realignment work associated with the Red River Waterway will eventually shorten the river between the Mississippi River and Shreveport by about 51 miles. While overseeing the work at Overton Lock and Dam, the Shreveport Area Office also executed a large number of contracts for revetment and realignment. On the Red, trench-fill revetment has become the main technique. A trench is dug along the preferred alignment and filled with stones. When the river eats away the bank up to the trench, the stones slide into the water, forming a permanent bank. Cutoffs are revetted the same way. Two trenches are dug and filled along the desired route, and then a small channel is dug from downstream. When the upper end is opened, the water scours the channel and eventually launches the stone. The cutoff sections are plugged and become oxbow lakes, ideal for development as recreation areas.⁴³



When Overton Lock and Dam was opened in November 1987, the Red River was open for navigation some 88 miles from the Mississippi River to Alexandria.⁴⁴ Lock and Dam 1 had become operational in June 1984, but it did not maintain a permanent pool until Overton was finished. Three more locks and dams were necessary to reach Shreveport. The Appropriations Bill for 1987 signed by President Reagan contained \$30 million for construction of all phases of Lock and Dam 3, as well as money for channel improvements in pools 3, 4, and 5.

Lock and Dam 3 was to be located near the town of Colfax, Louisiana, 141 river miles above the Mississippi River. The design, prepared by Engineering Division, called for six tainter gates rather than the five at Overton Lock and Dam, and a lock to provide a 31-foot lift from pool 2 below it to pool 3 above. The lock and dam was expected to take four years to build at a cost of \$160 million. Preparation work began in 1985 and, by the end of 1987, an access road was in existence, the levee had been realigned, stone fill revetment and a berm had been added to the existing channel of the river, a cofferdam had been built, and initial excavation for the lock and dam was complete.





Excavation of the site itself began in April 1988 and, by October, 3.5 million cubic yards had been removed. The Vicksburg District awarded a construction contract in March 1988, for \$114 million to Gust K. Newberg Construction Company and Hardaway Company, Joint Venture, Chicago, Illinois, for the lock and dam, overflow weir, closure dam, and

some final excavation. Two years later, the completed lock and dam structure was ready to be largely submerged in the Red River. It contained 301,000 cubic yards of concrete. In September of 1990, ground was broken for both Lock and Dam 4 below Coushatta and Lock and Dam 5 below Shreveport.⁴⁵



At the end of 1991, Lock and Dam 1 had been named the Lindy Claiborne Boggs Lock and Dam, in honor of the Louisiana Congresswoman. Lock and Dam 3 was scheduled for completion in June of 1992. The first phase of construction was complete for both Lock and Dam 4 and Lock and Dam 5. The Red River Waterway from the Mississippi River to Shreveport, which was now estimated to cost \$1.75 billion, was 65 percent complete.⁴⁶



Chapter Two Notes

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⁵Interview with Dennis Norris, Assistant Chief of the Bank Grading Unit, July 28, 1986.

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¹⁵*Fiscal Year 1984: Annual Report*, sec. 12, p. 2; *Annual Report Fiscal Year 1991*, sec. 12, p. 3; Dumas, *Clarion*, Nov. 7, 1990.

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¹⁷"Fact Sheet: Hinged Crest Gate Calion Lock and Dam," Ouachita Black Navigation Files, Project Management Branch Working Files; Interview with James H. Smith, Lockmaster at Felsenthal, March 2, 1987; Interview with Harold D. Speers, Lockmaster at Calion, March 2, 1987; PAO Press Release, Jan. 18, 1990.

¹⁸Col. Samuel P. Collins, Jr., Speech to the Ouachita River Valley Association, Nov. 27, 1979, Ouachita-Black Navigation Files, Project Management Branch.

¹⁹Col. Samuel P. Collins to Senator Russell Long, Dec. 24, 1980, *ibid.*

²⁰Col. Samuel P. Collins, Jr., Speech to Congressman Huckaby et. al., February 20, 1981, *ibid.*

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